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ABSTRACT

A comparative case study of two dissimilar school systems concerned with the development and implementation of a management information system was the focus for this research study. The overall planning, evaluation, and assessment model constituting the theoretical framework for this project was taken from the work of the recently completed Phi Delta Kappa National Study Commission on Evaluation. Project directors in each system served as participant observers, gathering and analyzing descriptive data on the project's progress. Their experiences, including comparative approaches, development of a program budgeting format, and suggested sequence of implementation activities, comprise the basis for replication possibilities to other school systems. (Author)

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A COMPARATIVE CASE STUDY OF TWO SCHOOL SYSTEMS IMPLEMENTATING A MANAGEMENT INFORMATION SYSTEM

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A. INTRODUCTION

There has been a large amount of material written devoted to the topic of Management Information Systems (MIS). The bulk of this has spoken in conceptual and descriptive terms leaving the planning and implementation questions to be answered by the practioner. The purpose of this paper is to present the historical progression of two public school districts as they moved through the planning and implementation of an MIS in each district. Concurrent with the MIS process in each district was the development of a program budget structure and revision of elementary reading and mathematics programs.

Bethlehem Central: Bethlehem Central has a district population of 25,000 in 50 square miles. The population type is stable with a slowly decreasing school population. Present student enrollment is 4750. It is a suburban district four miles southwest of the City of Albany (governmental center) with the majority of land undeveloped and a small amount of poor housing. The school district is of above average wealth with $2200 per pupil expenditure. Ethnic composition is very low in first generation or foreign born and solid ethnic strains are not identifiable; population is highly mobile with much movement into and out of district due to type of job market in the area. Unemployment rate is not available but is low and AFDC indicate 1.5% enrollment on welfare.

The school district organizational chart identifies an Assistant Superintendent for Educational Programs and Instruction and also a Director of Research. These office budgets as well as the BOCES budget areas identify and allocate resources for general planning, management design, and evaluation. Priorities will have been developed and a needs assessment involving students, staff and parents will have been completed by May 30, 1975. At the beginning

of the 1973-74 school year the Board had commited priority energies to the areas of 1-5 Career Education, Mathematics and Reading and it is planned that the recommended change decisions and planned change processes in these areas will be plugged into a Planning, Evaluation, Assessment Model. The district develops a Program Budget through the Assistant Superintendent for Educational Programs and Instruction office but this is a post facto development and has not contributed greatly to decision-making. PERT techniques have been instituted this year in 1-5 Career Education, Mathematics, and Reading and have included presentation of alternatives.

East Rochester: East Rochester has a district population of 11,000 in two square miles. The district population is increasing slightly but school enrollment is slowly decreasing with an enrollment of 2100. It is a suburban district two miles east of the City of Rochester ("clean industry" town) with no undeveloped land and a small amount of poor housing. The school district is of below average wealth with $1951 per pupil expenditure. Ethnic composition: 35% first generation or foreign born (Italian, Canadian); low mobility of population (60% live in same residence as 1965). The unemployment rate is between 3 - 4% and AFDC roles indicate 4% enrollment on welfare. Median family income in district is $11,500.

The school district organizational chart identifies a Director of Research and Planning. This office budget as well as BOCES budget areas identify and allocate resources for planning, evaluation, and assessment. Total staff study of all programs and a district-wide needs assessment study has been completed. Board reports have identified priorities; community and staff questionnaires have updated the needs assessment and an education goals and objectives plan is being studied. Syracuse University, through a survey study, has also identified student needs in the district. The Director of Research

and Planning has instituted CPM and PERT techniques for certain programs; these have begun the development of alternative proposals.

B. PROJECT INITIATION

In both school districts, the initiation of the implementation of an MIS came from the Central Office level; i.e., the Superintendents and their immediate assistants. The Boards of Education and the other administrative personnel, while aware of the MIS concept, had not verbalized or budgeted such a system as a district need or priority. Therefore, the pursuit of the Federal grant was a preliminary and unofficial search for the means to begin the MIS process within the districts. Additionally, time limitations placed upon project proposal submission (2-3 weeks) precluded the discussion within the districts of the immediate desire for such a process.

In terms of needs assessments concerning increased decision-making capabilities, the districts had received formal and informal input. Formal input existed from various committee reports and recommendations in this area; informal input came from community and staff discussions about the ways in which decision-making efficiency could be increased. The basic consideration became: a need to build district continuity and the ability to be prepared for a high level of sophistication in organizational decision-making as a result of the increasing number of and complexity of informational demands by other organizations on local, state and federal levels. It became apparent that the use of a defined planning-evaluation model could provide the foundation for such continuity.

At a meeting of district representatives to develop the grant application, the following outline was developed for first year implementation:

Needs: Needs to be met by the MIS implementation were: (1) identify the needs and actions necessary for preparing the district for the

future and for continued decision-making; (2) assist in aligning the districts' resources with programs and approaches that promote the most benefit and fulfill the most crucial needs; (3) aid the decision-making process by providing sound, substantial data at various evaluation points through a Management Information System.

Priority Objectives: Priority objectives were: (1) approval and implementation of the PDK Planning, Evaluation, Assessment Model; (2) MIS development and trial; (3) 3-5 year long-range developmental plan approval; and (4) application of the model to an evaluation of specific programs.

Activities: Activities were to include the development of planning systems by representative committees, MIS development and operation, specific program evaluation, long-range developmental plans, formation of broad-based performance objectives, cost-effectiveness development, program budgeting application.

Products: Products to be developed were operational procedures for district use in the areas of planning, evaluation, decision-making, educational goals and objectives, program budgeting, MIS usage, cost-effectiveness, and application to specific programs of reading and mathematics at the elementary level.

The planning-evaluation model identified as the foundation for the grant application and the implementation process was the PDK planning-evaluation model. * (Use Part III Planning & Evaluation needs - General purposes 1-7). (Use Figure 1 to present schematic)

The project grant was for a total of $30,675 to be provided for one year only. The percentage breakdown per district of this budget amount is presented to provide guidelines for districts planning MIS projects:

Category	E.R. Orig. %	E.R. Revised %	B.C. Orig. %	B.C. Revised %
Clerical Assistant	20.8	20.8	21.7	39.5
Projector Directors				
Teachers Salaries	12.7	23.0		
Administrators Salaries	20.8	13.9	28.5	21.9
Other Salaries	9.4	0	9.9	0
MIS & Planning Consultants	19.3	29.1	20.0	15.5
Travel for Staff Develop.	1.5	3.1	1.6	3.2
Rentals, Sustenance	8.5	3.0	9.0	4.2
Programming Costs	5.5	-	5.8	-
Supplies	-	-	-	5.8
Postage, Printing & Telephone	0	-	1.9	1.9
Fringe Benefits	1.5	7.1	1.6	8.0
	100.0	100.0	100.0	100.0

Revisions in the original budget were due to lack of initial information regarding internal staff development needs, consultant availability and cost factors, methods of data collection and storage, clerical and supply costs, etc. District costs were to be borne in anticipated central office personnel time allocated to the project; e.g. 40% time for East Rochester and 20% time for Bethlehem Central. These anticipated allocations, for a number of internal reasons to be discussed later, proved to be generous.

C. TO CONSULT OR NOT --- AND HOW? - The search for Consultants.

A major consideration in this project implementation was that new professional positions not be created within the districts. For this reason, consultants were selected to provide expertise not available in-house and to provide research and production capabilities which would have taxed district personnel. For example, no district personnel had previous experience with an on-going MIS system; also, the intensity of administrative personnel within the districts did

not provide for development of reports, data bank design, and on-going evaluation of the implementation process.

The search for consultants centered upon a number of qualifications. First, the visibility of the consultants based upon their previous work in the field; e.g., publications, workshops presented, materials developed, satisfaction of past clients, and perceived acceptability by district staff. Second, State Education Department requirements, piggy-backed onto Federal funds, require preferential consideration be given to in-state consultants with low travel requirements; also, State guidelines on per diem rates place $100/day limitations upon consultant costs unless flat cost contracts are written. This requirement forces the district to (1) hire consultants with lower expertise or to develop contracts with a single consultant to cover major portions of the project. Neither possibility provides for maximum district flexibility and decision-making. A last consideration was future funding alternatives. As federal funds became unavailable to the districts, future budgeting provisions and funding possibilities for project continuance had to be studied, c.f., in-state consultants are cheaper and more accessable, the utilization of BOCES consultants provides state financial aid to the districts, and political and public relation climates are more easily controlled by using local or in-state consultants.

Consultants were interviewed over a period of 2-3 months and included BOCES consultants, university professors, private consulting firms, and adoption models from other public schools. The selection of a BOCES consultant, due primarily to in-state and financial considerations, was not a decision considered to provide the maximum expertise and effectiveness but rather to provide practical and financial acceptability. Contracts were written for each district with the BOCES consultant with provisions for similar services to be provided in each district; i.e. MIS and program structure workshops, data collection and MIS design,

and process evaluations.

D. THE BREAKING POINT - Staff Personnel to be Involved and Major Component Sequences.

Major component sequences to be discussed are MIS component, program budget component, elementary reading component and elementary mathematics component.

Priorities given in each district to the completion of components were:

East Rochester	Bethlehem Central
1. Reading component	1. Program budget component
2. MIS component	2. MIS component
3. Program budget component	3. Mathematics component
4. Mathematics component	4. Reading component

Second, East Rochester plans included teacher and administrative personnel involvement in all components while Bethlehem Central plans were to have only administrative personnel involved in the components. Short descriptions of the progress and status of components in each district follows.

BETHLEHEM CENTRAL COMPONENTS, c.f., East Rochester Components

Program Budget Component: The administrative staff, as a reaction to external influences, e.g., literature, State Education Department, and community had recognized the need for a program budget format within which to develop district budgets. The district has a history of budget defeats and hopes that a program budget format will provide a more realistic interpretation of the budget to the public. Also, greater efficiency in decision-making is seen as a logical outcome of the use of a program budget.

Administrators, under the guidance of an outside consultant, spent two days developing a program budget structure (attached). The Assistant Superintendent and Business Administrator then developed the process for budget input. This process involved a number of steps different from past line-item budget input and these differences caused some

consternation. Major problems were:

1. Time allocation data gathered from elementary staff. Elementary teachers saw the reporting of time allocations to various program areas as the beginning of an accountability system. Principals threatened by this reaction wound up guessing much of the time allocation data. Inclusion of teacher representatives in the program structure development may have lessened this apprehension and difficulty.
2. Breakdown of general supplies categories into program categories. Administrators have generally not kept records or planned for distribution of general supplies (paper, workbooks, AV supplies, etc.) into specific program categories but, instead, have budgeted lump sums and distributed these monies as the need arose. For this reason, in this year's budget development, administrators had to estimate future program needs without an adequate data base. This data base will be developed in the coming year by keeping a running record of expenditures by program category.

Presently, administrators are working on the development of a format through which the program budget may be explained to the public. A basic question concerning this format is whether to include program evaluation data in conjunction with program budget data.

Lastly, an inservice program for administrators in the use of the program budget as a decision-making tool. A frustration experienced by administrators after providing data in program areas is the disconfirmation produced by an inability to use this data in decision-making.

MIS Component: The administrators staff had little initial knowledge of the MIS concept and did not see a need for this structure in the district. A consultant offered presentation was the means to provide

the information necessary for the administrative staff to become knowledgeable about the MIS concept.

As a result of two days work with the consultant, the administrative staff expressed a desire to develop a district-wide data base after a study of information flow and decision schedules presently existing in the district. Presently principals are reviewing their year critical decisions and the information flow processes used in these decisions. From these anaylses, a data bank will be developed containing information in separate but inter-referenced components. Presently, components identified as necessary are student, personnel, program, financial or budgetary.

The schedule for schematic development is the 1974-75 school year; data base development and input are scheduled for the summer of 1975. Both of these schedules are behind original targets and this is basically due to the limited MIS background existing in the district.

Mathematics Component: The mathematics component was initiated in September, 1974. While this component was not the highest priority component for Bethlehem Central this component has enjoyed the most success. The reasons behind this success seem to be:

1. A recognition by all participating that this component heeded study and modification.
2. The extension of participation in this component to the teaching staff rather than its confinement to the administrative stuff.
3. The expertise of staff in this component was initially higher than in the MIS or Program Budget components.

The objective of this component was the revision of the K-5 mathematics curriculum, the development of a planned mathematics inservice program for elementary staff, and development of monitoring

and program evaluation systems. Presently the curriculum has been revised around a sequential objectives-skills heirarchy; the resources used in teaching these skills consist of keyed commercial materials and a pre-post test procedure. The monitoring system to follow the skills heirarchy has been developed using beginning, mid year, and end of year reporting dates and parallels that contemplated for the reading component.

All staff are being presented the revised curriculum and are then providing input regarding the best means of inservice. This plan will be completed during Spring, 1975 with the evaluation component being completed in Summer, 1975.

Reading Component: Bethlehem Central, after a year of staff study, had decided to implement the Wisconsin Design for Reading Skill Development as the K-5 reading program. This design is an objective-based reading system with built-in management components. The 1974-75 year was the "inservice-implementation" year with each elementary school following an autonomous schedule with the end goal being a totally implemented system by the 1975-76 school year.

The formation of a monitoring system for administrative use and the development of a program evaluation process for 1975-76 use was the objective to be included in MIS development. The completion of this objective was to be an administrative responsibility for eventual presentation to teaching staff. Six elementary principals and the Assistant Superintendent were the members of the task force to meet this objective.

Elementary principals opted not to work during vacation periods for additional remuneration but, rather, to develop this process during the regular school year. From this decision has grown regularly scheduled curriculum and instruction meetings; these meetings have served to increase district-wide communication and

and consistency for the entire elementary curriculum.

The monitoring process has identified three district-wide reporting dates for all elementary schools, i.e., beginning of year entering skills assessment, mid-year progress report and end-of-year exit skills assessment. This will occur for each student and is based upon the skills heirarchy and criterion referenced tests provided by Wisconsin. This monitoring system will begin with an end-of-year exit skills assessment. The information will be provided to teaching staff for in-house use and to the central administration and Board of Education for program evaluation use.

The program evaluation objective is scheduled for summer development using indicators provided by the monitoring system and additional indicators developed by administrative staff during this implementation year.

Cost estimates for this objective include no cost for monitoring system development and $2,000 for program evaluation development.

EAST ROCHESTER COMPONENTS, c.f., Bethlehem Central Components

Program Budget Component: As a complement to the other components of this overall project, the district decided to re-examine its existing annual budget format with the hope that some improvements could be made which would assist the district in its goal of improving organizational decision-making abilities. After considering some alternatives and proposed modifications, the district elected to develop a program budget format. Some consultants were selected and a full day workshop was conducted for all district administrators as an appropriate means for providing an understanding of and the necessary background for program budgeting. A sub-committee of the administrative staff, consisting of the Superintendent, Business Manager and Director of Research and Planning, drafted the program structure (see attached outline) and related guidelines for complete development and implementation. A representative from the Board of Education worked closely

not only with this administrative sub-committee but with the total administration as efforts were made to introduce to the professional staff program budgeting in general terms and describe what it would require in the way of specific data from them.

At the present time, the district's central office staff is preparing the annual budget for the 1975-76 fiscal year according to two different formats - traditional line-item and program budget. This action is being undertaken as a result of a Board decision following a presentation of both budget types and the benefits to be derived from each. It is hoped that the adoption and publication of a program budget will represent a significant step in increasing the general public's understanding of their district's educational program. As a result, the general public will have a stronger basis on which to ask questions and offer input concerning the district's programs and priorities.

One problem which has surfaced as a result of the district's limited experience pertains to the feelings of building - level administrators. They are concerned that the costs associated with programs within their scope of responsibility will compare unfavorably with the costs for other building units. An unfavorable position is considered to be one where the high costs for one building unit result in concerns as to whether or not other building units are being short-changed. In such a case, decision-makers may elect to reduce the budget for the building unit with higher costs in an attempt to influence the degree of equilibrium that exists within the organization.

Another problem centers on the apprehensions of teachers, especially those with secondary assignments. They feel that the presence of several highly trained and experienced teachers within a specific department might lead others to ask whether or not that level of financial support ought to continue to exist. This concern becomes more apparent when it is realized that other departments may be expending substantially less

in financial resources for their regular operations. Naturally, these questions are at the heart of the issue of reallocation of resources to satisfy priorities and, to a more general extent, organizational decision-making. Smaller problems encountered include the method for allocating a teacher's time to specific courses and/or programs and the mechanical work involved in transforming previous traditional budgets to a program budget structure so that comparisons can be offered to the general public at the time a new budget format is being presented.

The district has attempted to ease the various apprehensions and concerns of some members of the staff by meeting with them and explaining the purposes and benefits of program budgeting. Success in being able to communicate with the parties involved has proven to be very effective for the district in the reduction of apprehension on the part of some staff members.

The costs incurred in developmental work to date have totaled approximately $900.00. This includes local monies as well as funds from the Federal grant. Additional costs will be incurred in the next several months, including but not limited to some clerical time and the publication of both traditional and program budget formats for general public perusal.

MIS Component: The district has adopted the Planning, Assessment and Evaluation Model developed by the PDK National Study Commission on Evaluation. This model serves as the basis for the district's continuing efforts to develop an operational management information system. Tentatively-developed administrative procedures and guidelines will be revised to reflect the priorities and realities of the district's ability to collect data that will be most useful in its future operations.

The original design stated that in its initial stages of development the MIS would be restricted to the absorption of primary level

(grades K-3) reading and math programs. Before these two programs could be incorporated into the MIS, significant changes in both programs had to occur. Previous sections of this paper describe the district's efforts in accomplishing the task of program revision. The basis for collecting quantifiable data has now been made possible and as a result of the district's future experience with and operation of these revised reading and math programs, the MIS will possess the potential to be of useful service on matters involving district-level policy-making and decision-making.

At the present time, the MIS is viewed as a system with five distinct but inter-related data banks: student, instruction, personnel, mamagement, and testing and evaluation. Each of these data banks consists of a small number of data elements that will undoubtedly increase in the future. As an example, the testing and evaluation file will include a computer-generated student profile which will consist of all standardized test results for each student. Total test scores and sub-test scores will be included. In addition, the latest aptitude test score will be inserted into a regression analysis as a computer sub-program to provide data reflecting each student's observed and predicted progress. The difference between observed and predicted scores will indicate the extent to which the student is performing as expected on the basis of the reported standardized tests. Additional information will be included in the testing and evaluation file to provide indications of student performance for a variety of organizational needs.

The 1974-75 year is devoted to the development of the multitude of mechanical tasks involved in establishing data-connecting links between the classroom, building, district and computer facilities. The appropriate forms and procedures for collecting and processing data requires a substantial amount of time, regardless of the size

of the school system. In addition to the developmental activities efforts have been made to collect the necessary data for future processing.

Some problems have occurred as a result of the district's limited experience. Basically, these problems are of two types. The first pertains to staff attitude and/or perceptions of the value of many MIS-related activities because there is difficulty in visualizing the direct benefits to be derived from an abstract idea that won't materialize and be tangible for some time into the future. This condition is constantly reinforced by the realization that school officials are confronted with crisis-type situations and therefore tend to be occupied with the immediate, the "here and now."

The other type of problem deals with acceptance of the fact that the existing and available data at the disposal of school systems does not necessarily lend itself to the easy and smooth development of an MIS, especially when that MIS design was formulated prior to the initiation of the actual work. When the MIS design is initially contemplated and finally expressed in written form, it represents an ideal situation, an ultimate goal for the system. But the realities dictate that the MIS developers must be extremely flexible psychologically as well as operationally. From this district's limited experience, a large part of overall efforts involves some combination of reversals and gains. Problems arise that were not anticipated, despite the best of efforts in pre-planning, and an organization should be careful not to deceive itself into thinking that MIS development can be done easily or smoothly or that the eventual product will represent a panacea for all organizational data needs.

Mathematics Component: This component is presently being developed in a similar fashion to the reading component. The district's needs assessment efforts revealed that there was as much a need for a coordinated and sequential skills development program in mathematics

as in reading.

A working committee of seven teachers, including one representative from each grade level K-6, and two administrators are currently developing a master list of skill objectives for a new mathematics program for grades K-6. When completed, this list of skill objectives will be coded to allow for the use of various types of commercial materials as well as to serve as the basis for data collection, monitoring and program evaluation. An additional analysis will reveal the extent to which elements of the district's standardized testing program are compatible with these math skill objectives.

In essence, this working committee is generating the foundation for the development of a comprehensive math program over the next two or three years. It is expected that this initial work will be completed within the next two-three months. Once completed, the math skill objectives will be disseminated to all elementary teachers and appropriate follow-up steps will commence for reaching the full objective in the future, a comprehensive math program.

At the present time, it is not expected that there will be problems with the development and/or eventual implementation of this math component. The district anticipates that the experience gained from the implementation of the new reading program will prove to be extremely valuable in identifying possible problems, obstacles and concerns. This experience, including the adoption of corrective measures, should pave the way for the district's eventual implementation of the math program. Most likely, the adoption of an instructional program which places heavy emphasis on diagnosis, individualized instruction, a variety of instructional techniques and materials and periodic pupil monitoring will result in the realization that the professional staff will need an extensive amount of in-service training to be prepared to handle the program.

The anticipated cost for the completion of the intial phase of

math program development is approximately $750.00. It is also expected that additional development costs within the next year will result in the district's incurring approximately $4,000. Implementation of the math program is not contemplated prior to the beginning of the 1976-77 school year.

Reading Component: As part of the previously indicated district efforts to assess present and future needs, East Rochester identified the area of primary level reading (grades K-3) as a top priority for major modifications. The existing reading program was a patchwork of different commercial texts and other material coupled with the individual interests and teaching styles of the district's professional staff over the last several years. The reading curriculum was out-of-date and did not lend itself to revision. As a result of the district's needs assessment efforts, the staff indicated a real need for a coordinated and sequential reading program that placed emphasis on skills development and periodic evaluation checkpoints.

To realize this desire, the district selected a working committee composed of seven primary teachers and two administrators. They developed a tentative outline of their proposed plans for internal planning purposes as well as communicating with potential consultants who might be retained for assuming direction of the program's development. Once the consultant was identified, this working committee spent a total of four weeks last summer on the identification of the specific approach to be taken, the development of the program, and the implementation tasks involved for its initial year of operation.

Specifically, the committee chose to adopt two commercial criterion-referenced reading programs after they had examined several possible models, including but not limited to programs developed entirely by larger school districts and the New York State-endorsed CAM-SPPED model. The programs selected were Random House's Individualized Learning Management System (for grades K-1) and Houghton Mifflin's

Individual Pupil Monitoring System (for grades 2-3). Both programs had to be modified and in many cases the skill objectives were re-written. All objections were arranged by sequence in various phases and levels and cross-referenced with the coding system used by both commercial programs. In addition to the instructional component, an evaluation component was designed which incorporated the district's standardized testing program, criterion-referenced tests, unit and end-of-the-book tests and proposed revisions in the district's existing program evaluation design.

This same group of teachers agreed to implement the new reading program in the 1974-75 school year. A number of orientation sessions for the teaching staff as well as newspaper articles and a presentation to the Board of Education have resulted, in part, in the decision of a significant number of other teachers to be involved in the new program in the 1975-76 school year.

As indicated, the working committee spent four weeks during the summer in developing the new reading program. The developmental costs for the program amounted to approximately $6,800.00 and the materials costs totaled $1,800.00. The end result of their efforts was the creation of two handbooks which have been disseminated to the entire primary staff and representatives of the intermediate and junior high staffs. The overall intention is to expand the reading program up into at least the intermediate grades over the next few years. The first handbook describes the complete instructional component of the program while the second handbook includes the evaluation component. All of the necessary record-keeping forms and testing schedules have been identified and included in the latter handbook.

Perhaps the biggest difficulty experienced to date with the new reading program is a deficiency in sophisticated classroom management skills on the part of the classroom teachers using the program. Secondly, a number of small problems concerning the arrangements for

small reading groups (number of groups and range in reading progress) by the participating classroom teachers have become evident. These are expected to dissipate with the future expansion of the program to include additional classroom teachers on the primary level.

E. COST FORMULATION

As well as the question "What good will an MIS do?" the question of immediate and long-range costs must be answered. For any new project, districts should develop these cost estimates and determine the relationship of these costs to products. In an attempt to provide a procedure to determine cost estimates and their product relationships, the following process is suggested. Examples will be given for each district using data obtained from selected components of their Title V-C projects.

The use of this procedure allows for re-established cost estimate for the various stages of new programs as well as total program costs. It also relates these costs to anticipated products. It recognizes that public school administrators have restricted amounts of time available to make such analyses, and therefore provides for quick data input and for an eyeball analysis procedure.

The procedure views the program as a five stage process.

Planning - determining program goals, objectives and processes, anticipated costs and anticipated products.

Development - transition process which provides for development of tools needed for the program implementation, e.g., curriculum writing, test development.

Implementation - actual use of previously prepared materials under a pre-established set of conditions.

Evaluation - using data and judgements to determine the relationship of pre-established goals and objectives.

Modification - the adoption of appropriate revisions in the original program as a result of actual experience and future needs.

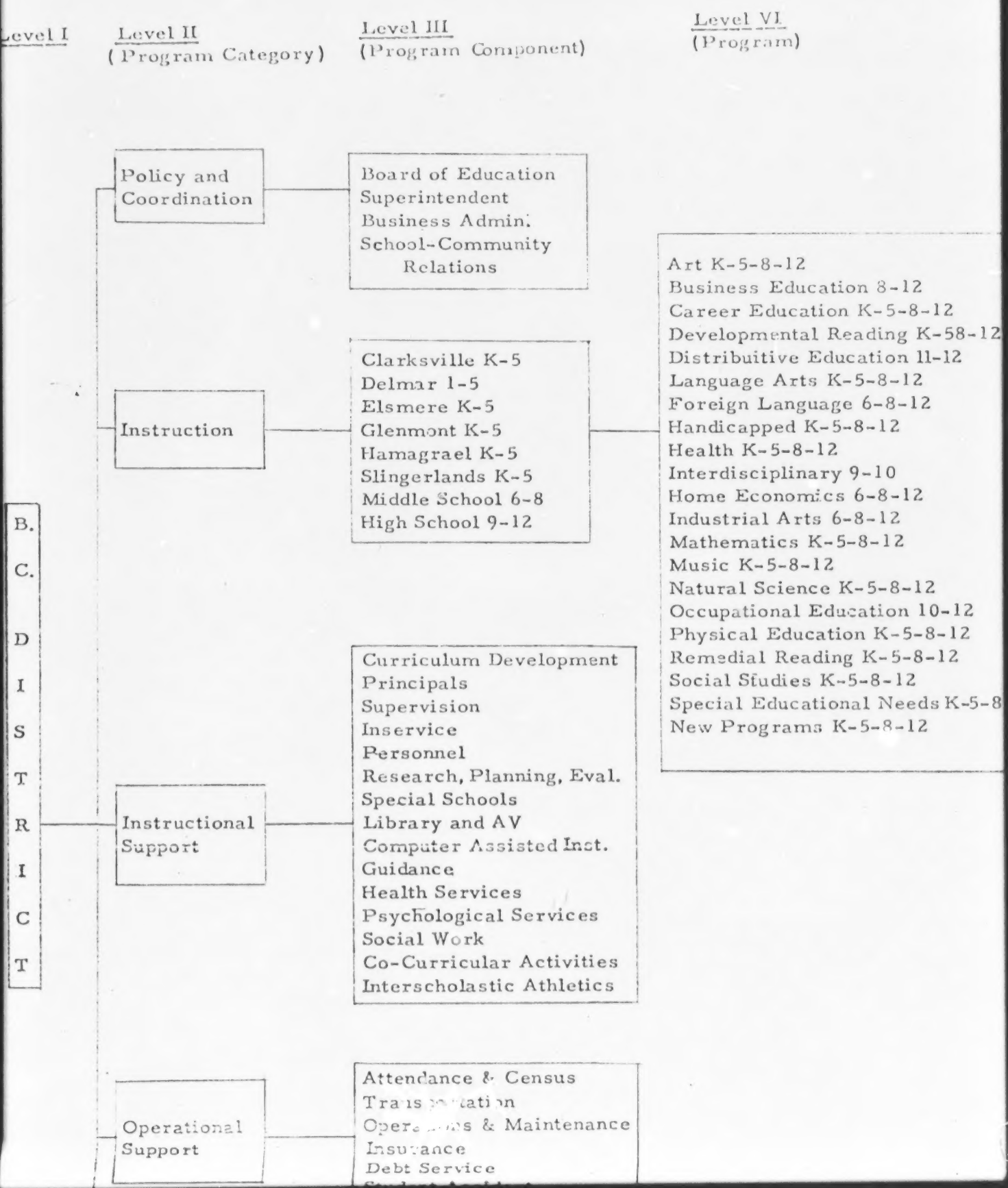
The cost items listed under each stage are common to most institutional budgets and are general enough to allow flexibility in their use.

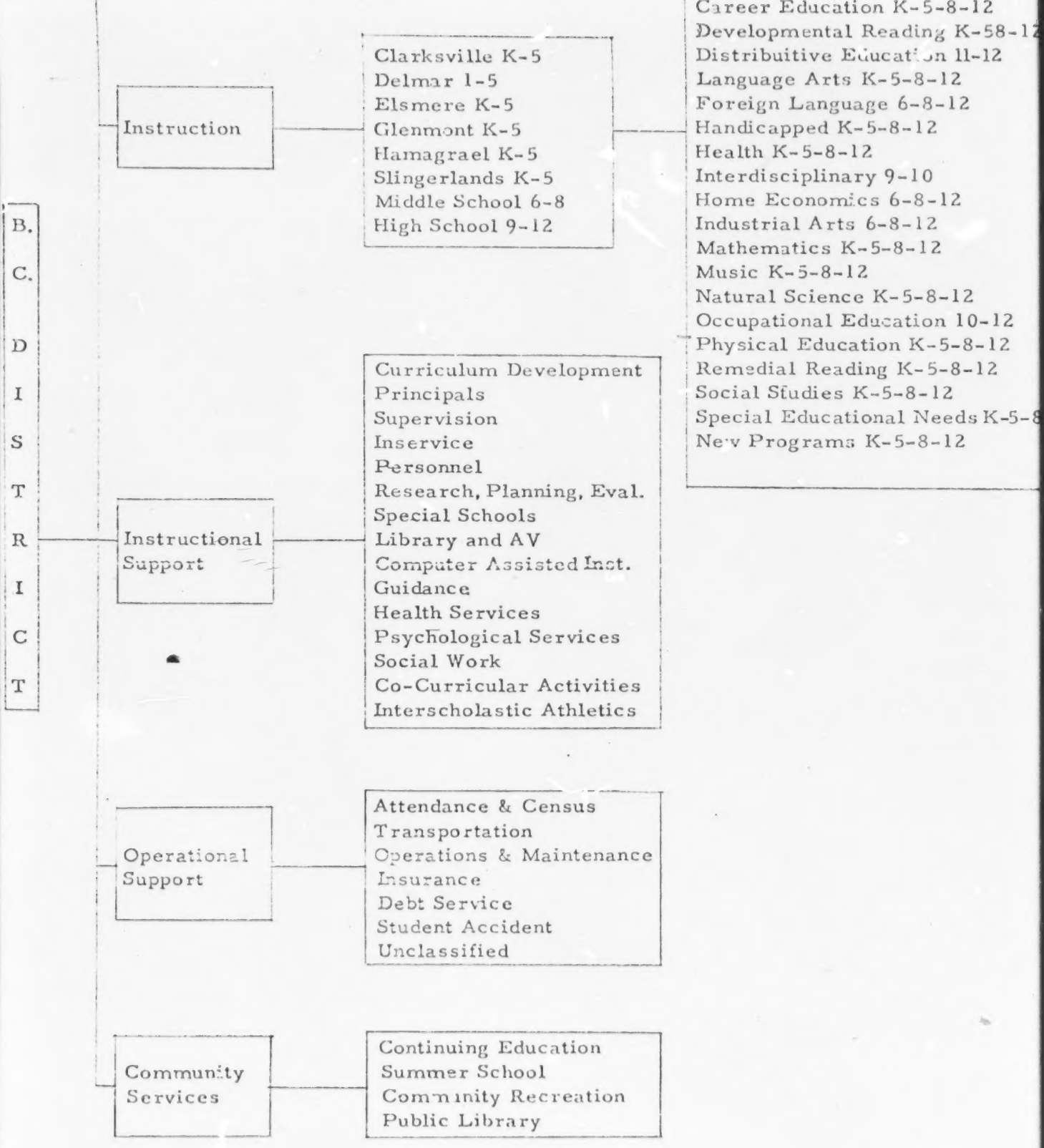
F. SUGGESTED SEQUENCE AND GUIDELINES FOR IMPLEMENTATION OF MIS ACTIVITIES

1. "Do your homework" in terms of what is possible in your organization. Be pessimistic. Some factors to include would be past project track records, organizational climate and structure, financial resources, staff expertise, availability of support staff and outside resources, potential of project to fit to existing programs and, if low, effect of project on existing programs.
2. Determination of potential user needs and commitment. As a result of this, there should be a commonly agreed upon set of specifications which are developed. A statement of short and long-range commitment on the part of leadership positions in the district should be acquired.
3. Assess data available and data needs. The care and thoroughness with which this is done will not only heavily influence the outcome of future project development, but will also restrict the chances of unanticipated surprises and delay in project development. Data needs should also be viewed in terms of priorities, from most important and needed immediately to least important and appropriate for later adoption.
4. Restrict scope and depth of initial program areas for MIS implementation - think of what you'd like to do and divide by five.
5. Recognize the normal complications which take place in any planned change process. Such complications are low staff expertise, additional time needs, budgetary changes, lack of understanding of means - ends relationships causing staff inertia.

6. Have a pre-established evaluation design which includes periodic progress checks.
7. Attempt to determine weak points in project in advance and have available alternatives to use if these weak points hamper project continuance.
8. Take the time and effort to develop a long-range plan to insure continuity, directionality, and compatibility among project components.
9. Provide for flexibility within the project. This is particularly needed on the part of the project director and such flexibility can also result in serendipitous results.
10. If in doubt, don't jump. Continue to evaluate your position. If there is not a reasonable prediction of success it may be best to postpone initiation until more favorable organizational situations exist.

BETHLEHEM CENTRAL PROGRAM BUDGET STRUCTURE

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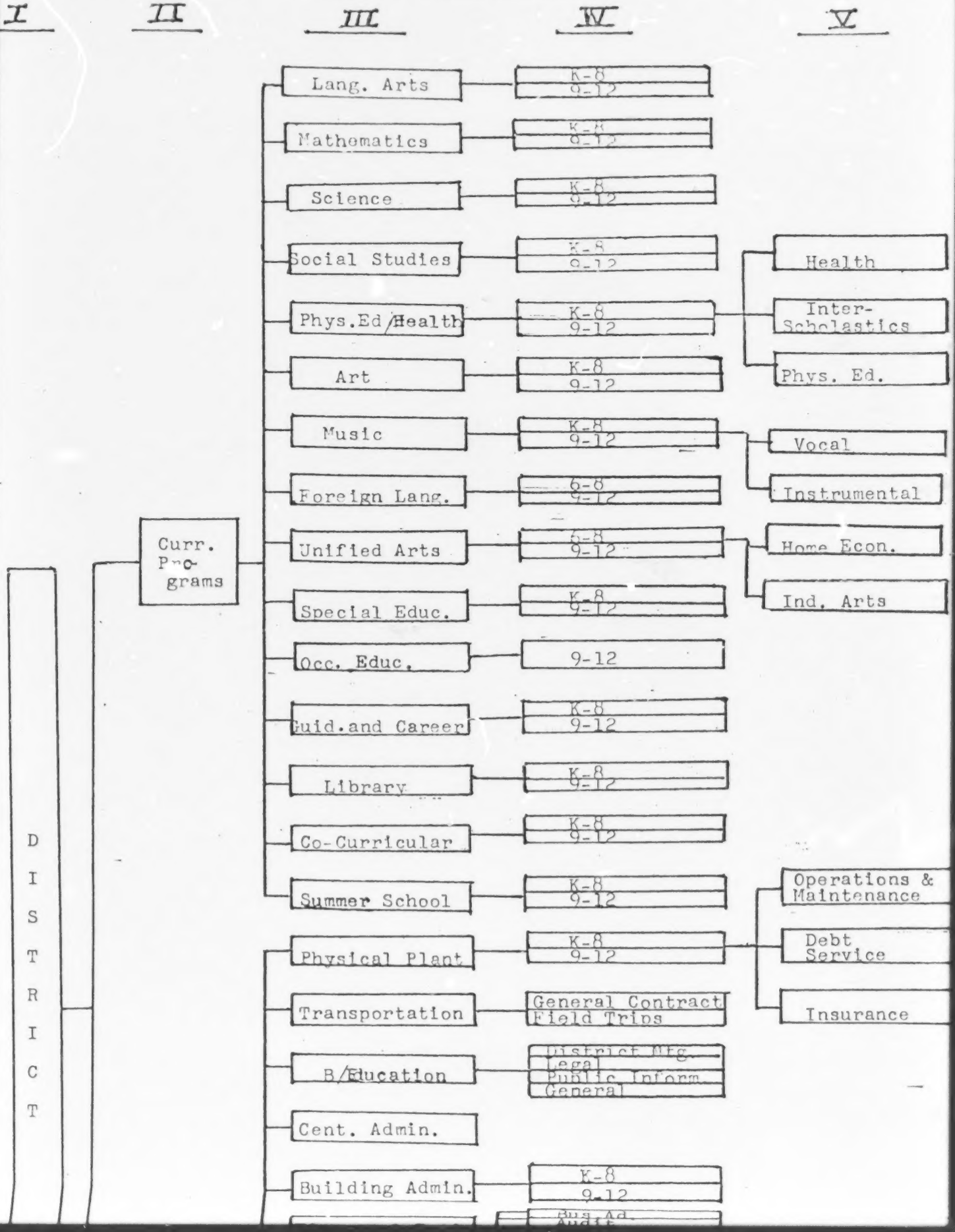
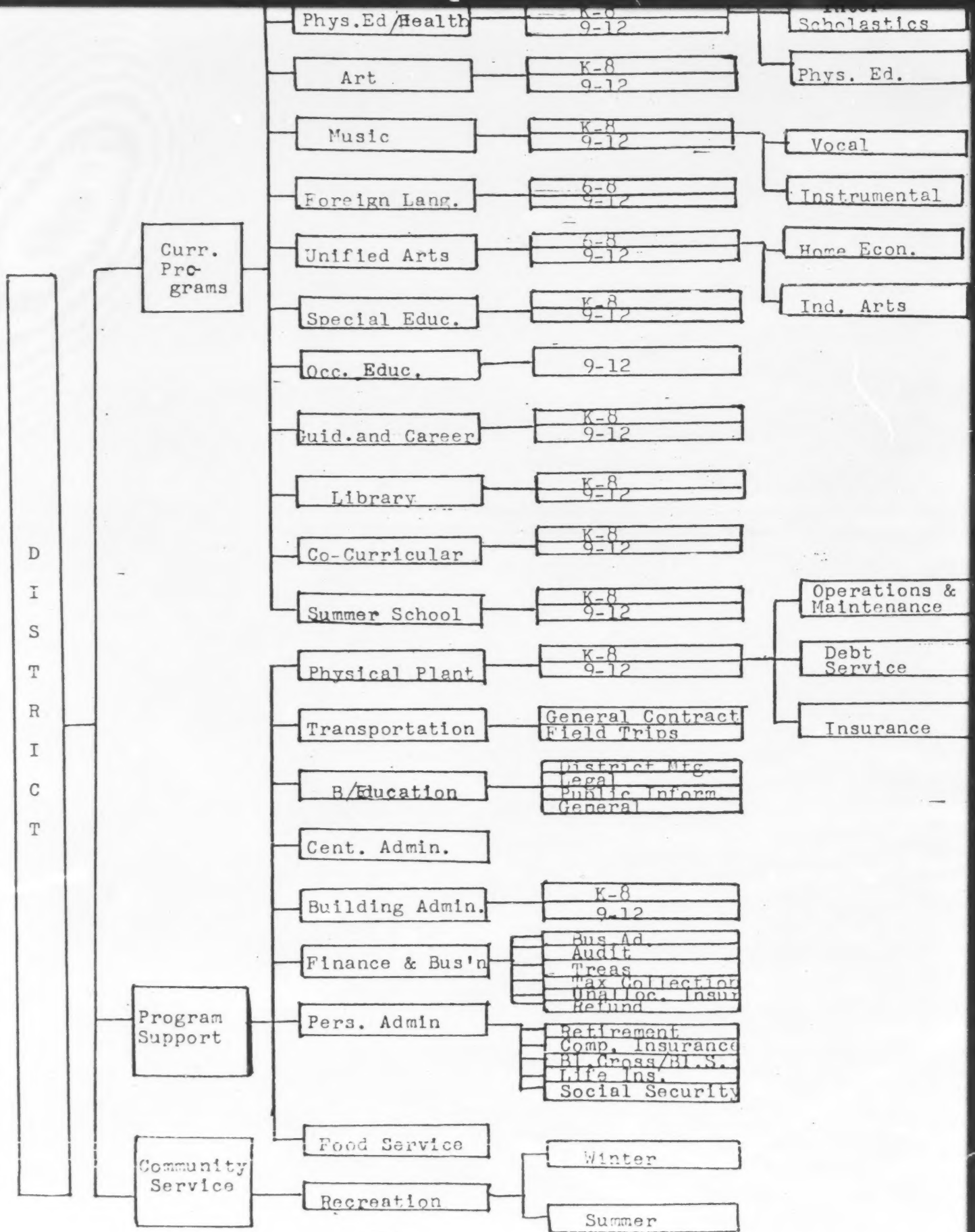
T
R
I
C
T
Instruction
Clarksville K-5
Delmar 1-5
Elsmere K-5
Glenmont K-5
Hamagrael K-5
Slingerlands K-5
Middle School 6-8
High School 9-12
Career Education K-5-8-12
Developmental Reading K-58-12
Distributive Education 11-12
Language Arts K-5-8-12
Foreign Language 6-8-12
Handicapped K-5-8-12
Health K-5-8-12
Interdisciplinary 9-10
Home Economics 6-8-12
Industrial Arts 6-8-12
Mathematics K-5-8-12
Music K-5-8-12
Natural Science K-5-8-12
Occupational Education 10-12
Physical Education K-5-8-12
Remedial Reading K-5-8-12
Social Studies K-5-8-12
Special Educational Needs K-5-8
New Programs K-5-8-12
Instructional Support
Curriculum Development
Principals
Supervision
Inservice
Personnel
Research, Planning, Eval.
Special Schools
Library and AV
Computer Assisted Inst.
Guidance
Health Services
Psychological Services
Social Work
Co-Curricular Activities
Interscholastic Athletics
Operational Support
Attendance & Census
Transportation
Operations & Maintenance
Insurance
Debt Service
Student Accident
Unclassified
Community Services
Continuing Education
Summer School
Community Recreation
Public Library


I
II
III
IV
V
DISTRICT
Curr. Programs
Lang. Arts
K-8
9-12
Mathematics
K-8
9-12
Science
K-8
9-12
Social Studies
K-8
9-12
Phys.Ed/Health
K-8
9-12
Health
Inter-Scholastics
Phys. Ed.
Art
K-8
9-12
Music
K-8
9-12
Vocal
Instrumental
Foreign Lang.
6-8
9-12
Unified Arts
6-8
9-12
Home Econ.
Ind. Arts
Special Educ.
K-8
9-12
Occ. Educ.
9-12
Guid.and Career
K-8
9-12
Library
K-8
9-12
Co-Curricular
K-8
9-12
Summer School
K-8
9-12
Physical Plant
K-8
9-12
Operations & Maintenance
Debt Service
Insurance
Transportation
General Contract
Field Trips
B/Education
District Mtg.
Legal
Public Inform.
General
Cent. Admin.
Building Admin.
K-8
9-12
Bus.Ad.
Audit


DISTRICT
Curr. Programs
Phys.Ed/Health
K-8
9-12
Scholastics
Art
K-8
9-12
Phys. Ed.
Music
K-8
9-12
Vocal
Instrumental
Foreign Lang.
6-8
9-12
Unified Arts
6-8
9-12
Home Econ.
Ind. Arts
Special Educ.
K-8
9-12
Occ. Educ.
9-12
Guid.and Career
K-8
9-12
Library
K-8
9-12
Co-Curricular
K-8
9-12
Summer School
K-8
9-12
Physical Plant
K-8
9-12
Operations & Maintenance
Debt Service
Insurance
Transportation
General Contract
Field Trips
B/Education
District Mtg.
Legal
Public Inform.
General
Cent. Admin.
Building Admin.
K-8
9-12
Finance & Bus'n
Bus.Ad.
Audit
Treas
Tax Collection
Unalloc. Insur
Refund
Program Support
Pers. Admin
Retirement
Comp. Insurance
Bl.Cross/Bl.S.
Life Ins.
Social Security
Food Service
Community Service
Recreation
Winter
Summer

PROGRAM PRODUCT COST ANALYSIS BETHLEHEM CENTRAL Program MIS Support

	Inclusive Dates	Estimated Costs	Anticipated Products	%
1.0 Planning 1.1 Inst. Personnel 1.2 Non-Inst.Personnel 1.3 Supplies + Equip. 1.4 Pupils 1.5 Contractual 1.6 Community 1.7 Overhead 1.8 Travel 1.9 Other TOTAL	7/1/74 to 11/1/74	1.1- $1,000. 1.5- 350. 1.8- 200. 1.9- 100.	1. Design for in-house Program structure development. 2. Consultant Contract 3. Staff schedule for program structure.	
2.0 Development 2.1 Inst. Personnel 2.2 Non-Inst.Personnel 2.3 Supplies + Equip. 2.4 Pupils 2.5 Contractual 2.6 Community 2.7 Overhead 2.8 Travel 2.9 Other TOTAL	11/1/74 to 12/15/74	2.1- $1,000. 2.3- 100. 2.5- 1,500. 2.7- 300. 2.8- 150.	1. Administrative workshops. 2. Program structure schematic developed by administrators 3. Input process developed.	
3.0 Implementation 3.1 Inst. Personnel 3.2 Non-Inst.Personnel 3.3 Supplies + Equip. 3.4 Pupils 3.5 Contractual 3.6 Community 3.7 Overhead 3.8 Travel 3.9 Other TOTAL	12/30/74 to 6/1/75	3.1- $1,000. 3.2- 2,000. 3.3- 900. 3.5- 500. 3.6- 100.	1. Administrative Budget input. 2. Board of Education use of program budget. 3. Presentation of program budget to public.	
4.0 Evaluation 4.1 Inst. Personnel 4.2 Non-Inst.Personnel 4.3 Supplies + Equip. 4.4 Pupils 4.5 Contractual	6/1/75 to 8/1/75	4.1- $1,000. 4.2- 1,000. 4.3- 500. 4.5- 500.	1. Administrative evaluation. 2. Board of Education evaluation. Use of questionaires.	

RAL Program MIS Support Component Program Structure Date February 197

Anticipated Products	% of Products Achieved	Actual Costs	Comments
sign for in-house ogram structure develop- nt. nsultant Contract ff schedule for program ucture.	100%	1.5- $ 350.00 1.8- 150.00 1.9- 100.00	Need for more information on available consultants, e.g., State Ed. Operated clearinghouse.
ministrative workshops. ogram structure matic developed by ministrators ut process developed.	100%	2.1- $ 1,000.00 2.3- 100.00 2.5- 2,000.00 2.7- 250.00 2.8- 150.00	
ministrative Budget ut. rd of Education use of gram budget. sentation of program get to public.	30%	3.1- $ 500.00 3.2- 2,000.00 3.3- 1,000.00 3.5- 0.00 3.6- 0.00	Need information on Board use of program budgets and presentations made to public.
ministrative evaluation. rd of Education luation. f questionaires.	0%	To be determined	

3.5 Contractual 3.6 Community 3.7 Overhead 3.8 Travel 3.9 Other TOTAL				
4.0 Evaluation 4.1 Inst. Personnel 4.2 Non-Inst.Personnel 4.3 Supplies + Equip. 4.4 Pupils 4.5 Contractual 4.6 Community 4.7 Overhead 4.8 Travel 4.9 Other TOTAL	6/1/75 to 3/1/75	4.1- $1,000. 4.2- 1,000. 4.3- 500. 4.5- 500.	1. Administrative evaluation. 2. Board of Education evaluation. Use of questionaires.	
5.0 Modification 5.1 Inst. Personnel 5.2 Non-Inst.Personnel 5.3 Supplies + Equip. 5.4 Pupils 5.5 Contractual 5.7 Overhead 5.8 Travel 5.9 Other TOTAL	To be determined			
GRAND TOTAL	TOTAL	$12,200.00		

inistrative evaluation. d of Education uation. questionaires.	0%	To be determined	
	TOTAL	$7,600.00	

PROGRAM PRODUCT COST ANALYSIS 32 EAST ROCHESTER Program Regular Instructio

Support for MIS

	Inclusive Dates	Estimated Costs	Anticipated Products	%
1.0 Planning 1.1 Inst. Personnel 1.2 Non-Inst.Personnel 1.3 Supplies + Equip. 1.4 Pupils 1.5 Contractual 1.6 Community 1.7 Overhead 1.8 Travel 1.9 Other TOTAL	10/1/73 to 6/15/74	TOTAL: $2,150.-Adm. salaries 100.-Clerical 150.-Travel	1. Study design for year-long committee work. 2. Analysis of current reading program. 3. Identification of future needs. 4. Plan of action for future program development. 5. Specifications for future program development. 6. Selection of consultant for program development work in summer.	
2.0 Development 2.1 Inst. Personnel 2.2 Non-Inst.Personnel 2.3 Supplies + Equip. 2.4 Pupils 2.5 Contractual 2.6 Community 2.7 Overhead 2.8 Travel 2.9 Other TOTAL	7/1/74 to 8/1/74	TOTAL: $4,500-tchr. salaries 4,500-Consultants 200-Clerical 1,450-Adm. salaries 25-sustenance	1. Selection of specific instructional approach to follow in program development. 2. Development of coordinated, sequenced set of skill objectives for grades K-3+, coding of objectives, cross referencing with commercial materials. 3. Development of appropriate record-keeping forms. 4. Development of complete evaluation component identifying specific tests, dates, etc. 5. Plan for program implementation and orientation of other groups to program. 6. Revision of district testing program.	
3.0 Implementation 3.1 Inst. Personnel 3.2 Non-Inst.Personnel 3.3 Supplies + Equip. 3.4 Pupils 3.5 Contractual 3.6 Community	Phase I: 9/10/74 to 6/30/75 Phase II: 9/10/75 to 6/30/76	Total-Phase I: $1,000-Consultants 3,350-Clerical 150-Sustenance 200-Travel 1,300-Tchr. workshops	1. Orientation of teachers using new reading program. 2. Identification of implementa- changes in program. 3. Identification of additional material needs. 4. Orientation of other groups to new program.	
3.7 Overhead 3.8 Travel 3.9 Other TOTAL				
4.0 Evaluation 4.1 Inst. Personnel 4.2 Non-Inst.Personnel 4.3 Supplies + Equip. 4.4 Pupils 4.5 Contractual	9/10/74 to 6/30/76	Total-Phase I: $ 450-Tchr. workshops 500-Adm. salaries 1,500-Consultants 900-Clerical	1. Analysis of criterion - referenced testing results. 2. Comparative analysis of standardized test results. 3. Survey of entire primary staff on reactions to program. 4. In-depth interviews with staff involved in new program.	TOO SOO DETERM TENTAT TIONS T POSITIV

Anticipated Products	% of Products Achieved	Actual Costs	Comments
y design for year-long mittee work. ysis of current reading ram. tification of future needs. of action for future ram development. ifications for future ram development. tion of consultant for ram development work ammer.	100%	TOTAL: $2,410-Admin. salaries 470-Tchr. workshops 50-Materials	
ction of specific in-ctional approach to w in program develop-t. elopment of coordinated, enced set of skill tives for grades K-3+, g of objectives, cross rencing with commer-materials. lopment of appropriate rd-keeping forms. lopment of complete ation component identi- specific tests, dates,	100%	TOTAL: $5,500-Tchr. salaries 3,300-Consul-tants 1,450-Admin. salaries 500-Clerical 50-Sustenance	
for program imple-ation and orientation of groups to program. sion of district testing ram.	60%	TOTAL-Phase I: $1,200-Consul-tants 3,350-Clerical 150-Sustenance 200-Travel 1,300-Tchr. Workshops	
ntation of teachers using reading program. ification of implementa-es in program. ification of additional rial needs. ntation of other groups w program.			
ysis of criterion - renced testing results. parative analysis of dardized test results. ey of entire primary on reactions to program pth interviews with	TOO SOON TO DETERMINE. TENTATIVE INDICA-TIONS TO DATE ARE	TOTAL-Phase I: $ 450-Tchr. workshops 400-Admin. salaries 200-Consul-tants 350-Clerical	

3.5 Contractual 3.6 Community	to 6/30/76	200-Travel 1,300-Tchr. workshops	1. Orientation of teachers using new reading program. 2. Identification of implementa-	
3.7 Overhead 3.8 Travel 3.9 Other TOTAL			changes in program. 3. Identification of additional material needs. 4. Orientation of other groups to new program.	
4.0 Evaluation 4.1 Inst. Personnel 4.2 Non-Inst.Personnel 4.3 Supplies + Equip. 4.4 Pupils 4.5 Contractual 4.6 Community 4.7 Overhead 4.8 Travel 4.9 Other TOTAL	9/10/74 to 6/30/76	Total-Phase I: $ 450-Tchr. workshops 500-Adm. salaries 1,500-Consul-tants 900-Clerical 200-Travel 200-Suste-nance Total-Phase II: 450-Tchr. workshops 1,500-Adm. salaries 900-Clerical 200-Travel --- TOTAL: 650-Consul-tants 600-clerical 100-materials 1,500-Tcher. salaries	1. Analysis of criterion - referenced testing results. 2. Comparative analysis of standardized test results. 3. Survey of entire primary staff on reactions to program. 4. In-depth interviews with staff involved in new program. 5. Administrative appraisal in terms of costs and perceptions of program success.	TOO SO DETER TENTA TIONS POSIT
5.0 Modification 5.1 Inst. Personnel 5.2 Non-Inst.Personnel 5.3 Supplies + Equip. 5.4 Pupils 5.6 Contractual 5.7 Overhead 5.8 Travel 5.9 Other TOTAL	9/10/75 to 7/10/76		1. Identification of specific program revisions. 2. Revision of prepared program curriculum and material. 3. Orientation of staff to program revisions. 4. Modifications to allow for upward extension of new program into the higher grades.	NOT A UNTI UND
GRAND TOTAL	TOTAL	$28,725.00		

ation of teachers using eading program. fication of implementa- s in program. fication of additional ial needs. ation of other groups program.	60%	Workshops	
sis of criterion - enced testing results. arative analysis of ardized test results. y of entire primary on reactions to program pth interviews with involved in new program nistrative appraisal in of costs and percep- of program success.	TOO SOON TO DETERMINE. TENTATIVE INDICATIONS TO DATE ARE POSITIVE.	TOTAL-Phase I: $ 450-Tchr. workshops 400-Admin. salaries 200-Consultants 350-Clerical 100-Travel	
fication of specific am revisions. sion of prepared program culum and material. tation of staff to am revisions. fications to allow for rd extension of new am into the higher s.	NOT APPLICABLE UNTIL 1975-76 IS UNDERWAY.	NOT APPLICABLE UNTIL 1975-76 IS UNDERWAY	
	TOTAL	$21,430.00	